

FISHES OF THE CYPRINID GENUS *SEMILOTUS* BLEEKER 1859, WITH DESCRIPTION OF A NEW SPECIES FROM MANIPUR, INDIA¹

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(With one text-figure and one plate)

Key words: Cyprinid fish, *Semiplotus*, new species, Manipur

The cyprinid fishes of the genus *Semiplotus* Bleeker are distributed in northern India, Myanmar and Nepal. Four species (including a new one) of the genus are recognised. They are: *S. semiplotus* (McClelland), *S. modestus* Day, *S. cirrhosus* Chaudhuri and *S. manipurensis* sp. nov. This paper describes the new species from the rivers and streams draining Ukhrul dist. of Manipur (Chindwin drainage), India. *Semiplotus manipurensis* differs from *S. semiplotus* and *S. cirrhosus* in having a broader body, fewer branched dorsal rays and several horny tubercles scattered randomly on the snout. It differs from *S. modestus* in having a broader body and an unserrated last dorsal spine. *Semiplotus cirrhosus* is considered a valid species. A key to identification of species of the genus *Semiplotus* is provided.

INTRODUCTION

Bleeker (1859) established the genus *Semiplotus* to accommodate *Cyprinus semiplotus* McClelland, 1839 (type locality: River Brahmaputra, Assam). Day (1870) described another species, *S. modestus* from Akyab in Myanmar and distinguished it from *S. semiplotus* by the serrated last dorsal spine. Later, Chaudhuri (1919) described *S. cirrhosus* based on a single specimen collected from Putao of Myanmar, and distinguished it from the former two species mainly by the presence of two pairs of maxillary barbels and absence of knob at the symphysis of the lower jaw. However, Hora (1973) treated *S. cirrhosus* as a synonym of *S. semiplotus*. Jayaram (1981) included only *S. semiplotus* and *S. modestus* in the genus. The distribution of the genus is restricted to the Himalayan foothills of Nepal, north and northeast India and Myanmar (Fig. 1).

On the basis of its jaw anatomy, Howes (1982) put *Semiplotus* under the genus *Cyprinion* Heckel, 1843. Talwar and Jhingran (1991) recognised *Semiplotus* as a subgenus of *Cyprinion* without justification. However, Banareescu and Herzig (1995) recognised *Semiplotus* as a distinct genus, as it has more

branched dorsal fin rays.

No detailed revisional work on this genus has been conducted, and very little is known about the fishes of this genus. This is partly due to the difficulty in obtaining specimens. A brief revision of the genus *Semiplotus* is made here.

MATERIAL AND METHODS

The new species was collected by cast net. Type specimens are deposited in the Manipur University Museum of Fishes (MUMF) and National Science Museum, Tokyo (NSMT). Type and other specimens of *S. cirrhosus*, *S. modestus* and *S. semiplotus* in Zoological Survey of India, Calcutta were re-examined. Measurements and counts follow Jayaram (1981). Body proportions are expressed as percentage of standard length (SL) and head length (HL). Total number of vertebrae was counted from radiographs and dissected specimens. Transverse scales were counted as scales between lateral line and dorsal fin origin (including mid-dorsal scale)/lateral line scale/ scales between lateral line and pelvic fin origin.

Semiplotus Bleeker, 1859

Semiplotus Bleeker, 1859, *Nat. Tijdschr. Neder.-Indie*. 20: 424 (type species *Cyprinus semiplotus* McClelland, 1839); Banareescu &

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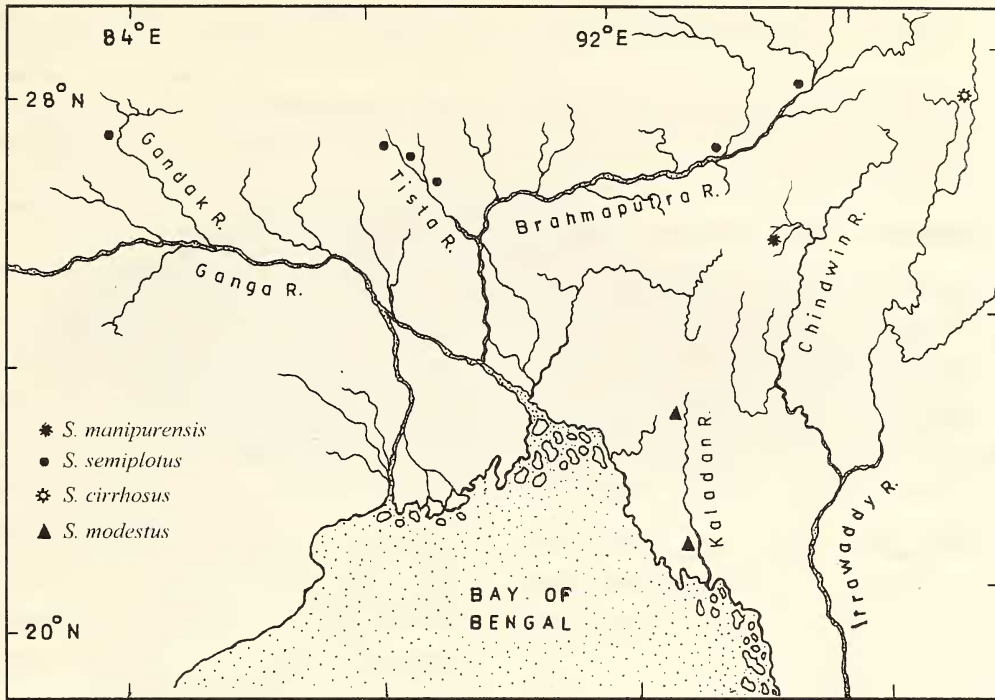


Fig. 1: Drainages of Nepal, northern and eastern parts of India and Myanmar showing the distribution of known species of *Semiplotus*.

Herzig-Straschil, 1995, *Ann. Naturhist. Mus. Wien.*, 97 B: 411 (status discussed).

Diagnosis: A genus of Cyprinidae with the following combination of characters: body large and deep (depth 35.4-41.3% SL); head short, as long as high at occiput (height 93.3-116.1% HL); snout broad, blunt with open pores or tubercles; mouth inferior, wide (width 45.3-65.2% HL) with exposed cornified mandibular cutting edge; dentary with a broad deflected labial surface; maxillary barbel rudimentary; long dorsal fin with 20-25 branched rays; anal fin with 7-9 branched rays; lateral line scales 27-36; lower jaw with a knob at symphysis.

Distribution: INDIA, Ganga-Brahmaputra, Kaladan and Chindwin drainages, Nepal and Myanmar.

Remarks: Banarescu and Herzig (1995) differentiated *Semiplotus* from *Cyprinion* on the basis of (i) more branched dorsal fin rays (20-25

vs. 9-17), (ii) fewer branched anal fin rays (5 vs. 7) and (iii) no barbels. The first character holds true. However, the characters (ii) and (iii) differ from our observations. All the *Semiplotus* specimens studied by us have a pair of small maxillary barbels and 7-9 branched anal fin rays. From the literature it is also observed that *Semiplotus* has more pelvic rays (8-9 vs. 7), fewer scales on lateral line (27-36 vs. 33-45), and a deeper body than *Cyprinion*.

KEY TO THE SPECIES OF
GENUS *SEMILOTUS* BLEEKER

- 1a Last simple dorsal ray serrated posteriorly; branched dorsal rays 20-21 *S. modestus*
- 1b Last simple dorsal ray not serrated posteriorly; branched dorsal rays 20-25 2
- 2a Tubercles on snout randomly distributed on each side of tip of snout; branched dorsal rays 20-23 *S. manipurensis*

- 2b Tubercles/open pores on snout arranged in a transverse row; branched dorsal rays 23-25 ... 3

 3a Open pores on snout 4; lateral transverse scales 7/1/4 *S. cirrhosus*
 3b Open pores on snout 10-12; lateral transverse scales 6/1/4 *S. semiplotus*

***Semiplotus cirrhosus* Chaudhuri, 1919**

Semiplotus cirrhosus Chaudhuri, 1919, *Rec. Indian Mus.* 16(4): 280 pl. 22 figs 3, 3a (type locality: Putao plains, Burma); Hora, 1973, *Rec. Indian Mus.*, 39(1): 46 (part).

Material examined: ZSI F 9747/1 holotype, 41.0 mm SL, Myanmar: Putao plains near Tibetan frontier, coll. Murray Stuart, ?ii.1918

Diagnosis: A species of *Semiplotus* with large eye (diameter 36.2% HL); predorsal length 47.6% SL; a row of 4 open pores (2 on each side) on the snout; the last simple dorsal fin ray not serrated; 25 branched dorsal fin rays; 8 branched pelvic fin rays; 9 branched anal fin rays; a small knob at the symphysis of lower jaw.

Description: Dorsal rays iii, 25; pectoral rays 15; pelvic rays i, 8; anal rays ii, 9; lateral line scales 33; scales above lateral line to origin of dorsal fin 7; scales below lateral line to origin of pelvic fin 4; predorsal scales 13.

Head and body laterally compressed. Snout broad, obtuse, with a row of 4 open pores (2 on each side). Maxillary barbels well developed, extending to below anterior margin of orbit. Eye large, almost in the middle of head. Caudal peduncle deep. Dorsal fin origin slightly nearer snout tip than caudal fin base. Last simple dorsal ray not serrated. Pectoral fin almost reaching pelvic fin origin. Caudal fin forked.

Colour: Head and body silvery with black dorsal surface. Ventral surface dull white.

Distribution: Myanmar: Putao plains (Irrawady drainage).

Remarks: Chaudhuri (1919) described *S. cirrhosus* and differentiated it from other *Semiplotus* by the presence of two small

maxillary barbels and the absence of a knob at the symphysis of the lower jaw. Hora (1937) treated *S. cirrhosus* as a synonym of *S. semiplotus* after he found that all other specimens of the genus in ZSI possessed small maxillary barbels. It has not been possible to examine more specimens from Myanmar. However, the holotype of *S. cirrhosus* in ZSI (F9747/1) has been examined. The species differs from *S. semiplotus* as it has fewer pores on the snout [4 (2 on each side) vs. 10-12 (5-6 on each side)]; a longer head (length 26.9% SL vs. 21.9-23.7); larger eye (diameter 36.2% HL vs. 20.8-30.0); longer predorsal length (47.6% SL vs. 39.5-44.2); one more scale row between dorsal fin origin and lateral line (7 vs. 6) and fewer branched pelvic fin rays (8 vs. 9). The anal fin of the holotype is damaged. But Chaudhuri (1919) reported that it had two simple and nine branched rays. Thus, it also differs from *S. semiplotus* as it has more branched anal rays (9 vs. 7). Thus *S. cirrhosus* is treated here as a separate species.

***Semiplotus manipurensis* sp. nov.**
(Plate 1 Figs. 1, 2a)

Material examined: Holotype: MUMF 2049, 83.5 mm SL, India: Chall ou river at Thetsi, near Jessami, Manipur (Chindwin basin), 94° 35' E, 25° 38' N, about 1,270 m above msl, coll. L. Kosygin, 2.vi.1994.

Paratypes: NSMT-P 52636. 1 ex., 85.0 mm SL, same data as holotype; MUMF 2011, 2045-2048, 2051-2055, 2145, 2146, 12 ex., 55.3-126.0 mm SL, same data as holotype; MUMF 2236-2240, 5 ex., 42.9-57.5 mm SL, India: Chall ou river, Chingai, Manipur, 94° 31' E, 25° 18' N. 130 km northeast of Imphal, 30.iv.1995; MUMF 2250, 2251, 2 ex., 53.3-185.0 mm SL. India: Wanze stream, Khamsom, Manipur. (Chindwin basin), 116 km northeast of Imphal, 94° 32' E, 25° 12' N, coll. L. Kosygin. 7.vii.1995.

Diagnosis: A species of *Semiplotus* with a broad body (width 17.3-22.1% SL); last dorsal spine not serrated; 20-23 branched dorsal fin

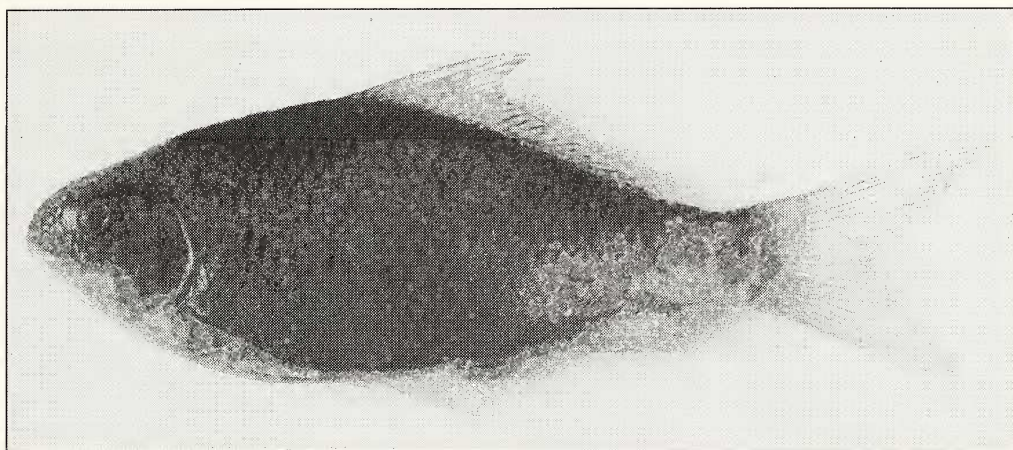


Fig. 1 : *Semiplotus manipurensis* sp. nov (holotype, MUMF- 2049, 83.5 mm SL).
Scale bar indicates 10 mm

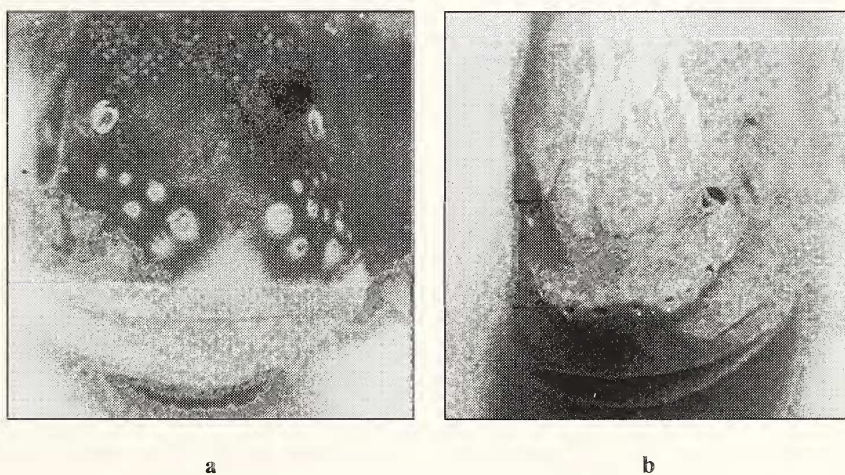


Fig. 2: Front view of snout showing arrangement of tubercles/open pores:
a. *S. manipurensis* (MUMF-2251, 185.0 mm SL); b. *S. semiplotus* (ZSIF-2662/2, 181.0 mm SL)

rays; 9 branched pelvic fin rays; 12-13 predorsal scales; dorsal fin base length 34.0-39.7% SL; 32-36 lateral line scales; 7 scale rows between dorsal fin origin and the lateral line; many horny tubercles distributed randomly on each side of snout tip, extending posteriorly to the region below the anterior margin of orbit.

Description: Dorsal rays iv, 20-23 (last ray branched at base); pectoral rays 15-16; pelvic fin rays i, 9; anal fin rays ii-iii, 7-8 (last ray branched at base); principal caudal fin rays 10 + 9; lateral line scales 32-36; scales above lateral line to origin of dorsal fin 7; scales below lateral line to origin of pelvic fin 4; predorsal scales 12-13; total vertebrae 36.

Body short, deep and compressed. Dorsal profile arched from tip of snout to dorsal fin origin and then gently sloping down to caudal fin base. Dorsal profile more convex than ventral. Abdomen edge rounded. Head short and small compared to body depth, almost as long as high at occiput. Snout thick, prominent, broad, obtuse, overhanging the mouth. Snout with horny tubercles distributed randomly on each side, extending to the region below the anterior margin of orbit. Tubercles larger and more prominent towards tip of snout, smaller and less prominent posteriorly. Tubercles not well developed in small specimens (<56.0 mm SL). Number and size of tubercles increasing with total length. Eye large, not visible from below, placed almost in middle of head. Nostrils close to each other, closer to eye than to tip of snout. Mouth wide, transverse, inferior, lower jaw with a knob at symphysis, and an exposed cornified cutting edge. Small maxillary pair of barbels, more prominent in smaller specimens, hardly visible in larger specimens as they are concealed in groove between maxilla and snout. Scales moderate to large, those on chest and abdomen smaller than those of other parts of body. Lateral line complete.

Dorsal fin origin nearer to snout tip than to caudal fin base, extending from a little ahead of pelvic fin to above anal fin base. Last simple

dorsal ray strong, osseous and not serrated in large specimens. In small specimens (<130 mm SL), distal third of spine slightly serrated posteriorly. Height of dorsal almost equal to head length. Pectoral fin shorter than head, not reaching pelvic fin origin, latter not reaching anal fin origin. Caudal fin deeply forked with a slightly longer upper lobe.

Colour: Body silvery white, slaty grey dorsally. All fins tinged orange with dusky edges.

Distribution: INDIA: Challou river and Wanze stream (Chindwin drainage), Ukhrul District, Manipur.

Etymology: The species is named after the state of Manipur.

Habitat: Moderate to fast flowing hill streams with rocky beds. Smaller specimens inhabit shallow and fast flowing water, while larger ones inhabit deeper waters where water current is comparatively slow.

Remarks: *Semiplotus manipurensis* differs from *S. semiplotus* in its wider body (width at dorsal fin origin 17.3-22.1% SL vs. 11.8-16.7), fewer branched dorsal fin rays (20-23 vs. 23-25) and randomly distributed tubercles on either side of the tip of snout vs. a transverse row of open pores on the snout including its tip [all the specimens of *S. semiplotus* in ZSI and the freshly collected specimen (MUMF 2307) from the Brahmaputra river at Dibrugarh, Assam have open pores on snout, while the 21 specimens of *S. manipurensis* have tubercles on snout]; shorter dorsal fin base (34.0-39.7% SL vs. 40.9-44.6); more scales in lateral line (32-36 vs. 27-33) and one more scale row between the origin of dorsal fin and lateral line (7 vs. 6).

The new species is also distinct from *S. cirrhosus* as it has a wider head (63.3-74.2% HL vs. 58.8); wider body (width at dorsal fin origin 17.3-22.1% SL vs. 11.1); fewer branched dorsal rays (20-23 vs. 25); smaller eye (diameter 20.0-31.8% HL vs. 36.2); shorter predorsal length (40.8-45.7% SL vs. 47.6); one more branched pelvic fin ray (9 vs. 8); fewer branched anal fin rays (7-8 vs. 9) and many randomly

distributed tubercles on snout (vs. a transverse row of 4 open pores across the snout).

Semiplotus manipurensis is distinct from *S. modestus* as it has fewer predorsal scales (12-13 vs. 14-15); broader body (width at dorsal fin origin 17.3-22.1% SL vs. 9.9%); more branched pelvic rays (9 vs. 8) and last dorsal spine not serrated posteriorly (vs. serrated).

***Semiplotus modestus* Day, 1870**

Semiplotus modestus Day, 1870, *Proc. Zool. Soc. Lond.*: 101 (type locality: Akyab, Burma); Barman, 1988, *J. Bombay nat. Hist. Soc.* 85(1): 210 (Koladyne R., Mizoram).

Cyprinion modestum: Howes, 1982, *Bull. Brit. Mus. nat. Hist. (Zool)*, 42(4): 331 (status discussed).

Material examined: ZSI 2343, 1 ex., (syntype), 85.4 mm SL, Myanmar: hill ranges near Akyab, coll. F. Day, no date.

Diagnosis: A species of *Semiplotus* with last dorsal spine osseous and serrated posteriorly; 20-21 branched dorsal fin rays; 8 branched pelvic fin rays; 14-15 predorsal scales; 32-34 lateral line scales; and several open pores on either side of snout.

Description: Dorsal fin rays iv, 20-21; pectoral fin rays 15; pelvic fin rays i, 8; anal fin rays iii, 7; principal caudal fin rays 10 + 9; lateral line scales 32-34; scales above lateral line to origin of dorsal fin 7; scales below lateral line to origin of pelvic fin 4; predorsal scales 14-15.

Body deep, laterally compressed. Head short with concave dorsal profile, as long as high at occiput. Snout short, obtuse, overhanging the mouth with several open pores on either side. Maxilla extending below the middle of orbit. Eye large, longer than snout. Dorsal fin origin nearer snout tip than caudal base. Last simple dorsal ray serrated posteriorly. Pectoral fin extends to pelvic fin origin, latter to anal fin. Caudal fin forked, lower lobe slightly longer than upper.

Colour: Silvery grey with black dorsal surface. Pelvic and anal fins orange.

Distribution: INDIA: Kaladan river (Koladyne river as per Barman, 1988), Mizoram; Myanmar: Akyab.

Remarks: The species is quite distinct from other members of the genus *Semiplotus* as it has a posteriorly serrated last dorsal spine.

***Semiplotus semiplotus* (McClelland, 1839)**
(Plate 1 Fig. 2b)

Cyprinus semiplotus McClelland, 1839, *Asiatic Researchers*, 19(2): 274, 346, pl. 37 fig. 2 (type locality: River Brahmaputra, upper Assam, India).

Semiplotus maclellandi: Day, 1878, *Fishes of India*: 550 (description).

Semiplotus semiplotus: Hora, 1937, *Rec. Indian Mus.*, 39:45 (part).

Cyprinion semiplotum: Howes, 1982, *Bull. Brit. Mus. nat. Hist. (Zool)*, 42(4): 331, figs 1a-c (Jaw structure studied, status discussed).

Material examined: MUMF 2307, 1 ex., 131.4 mm SL, India: Brahmaputra river, Dibrugarh, Assam, coll. L. Kosygin, 22.x.1995; ZSI F 2861/2 1 ex., 162.0 mm SL, India: Darjeeling Himalayas, coll. G.E. Shaw & E.O. Shebbeare, 28.iii.1937 ZSI F 2662/2, 3 exs. 89.7-181.0 mm SL, India: Tista drainage, S.L. Hora, ?.xi.1938.

Diagnosis: A species of *Semiplotus* with last simple dorsal fin ray not serrated; 23-25 branched dorsal fin rays; a transverse row of 10-12 open pores (5-6 on each side) across the snout posteriorly directed toward middle of orbit.

Description: Dorsal fin rays iv, 23-25; pectoral fin rays 15-16; pelvic fin rays i, 9; anal fin rays ii, 7 (last ray branched at base); principal caudal fin rays 10 + 9; lateral line scales 27-33; scales above lateral line to origin of dorsal fin 6; scales below lateral line to origin of pelvic fin 4; predorsal scales 11-12.

Head and body deep, laterally compressed, with convex dorsal profile. Snout blunt with a very distinctive transverse row of 10-12 (5-6 on each side) open pores across it. Posteriorly open

TABLE I
MORPHOLOGICAL CHARACTERS OF *S. MANIPURENSIS*, *S. SEMIPLLOTUS*, *S. CIRRHOSUS* AND *S. MODESTUS*

	<i>S. manipurensis</i>			<i>S. semipllotus</i>			<i>S. cirrhosus</i>		<i>S. modestus</i>	
	Holotype MUMF 2049	Paratypes NSMT-P 52636, MUMF 2011, 2045-2048, 2051-2055, 2145, 2146 2236-2240 2250-2251	mean s.d.	1 min - max	10 min - max	mean s.d.	Holotype ZSIF 9747/1	Syntype ZSI 2343		
N		20		1	10				1	
In % of Standard length										
Head Length	24.6	23.2-26.9	24.9 1.0	23.4	21.9-23.7	22.9 0.7	26.9		23.9	
Body Depth	39.5	35.7-41.3	38.4 1.6	37.5	35.4-41.2	38.6 1.9	36.3		40.8	
Body width	20.1	17.3-22.1	19.2 1.5	14.8	11.8-16.7	13.6 1.5	11.1		9.9	
Predorsal length	43.8	40.8-45.7	44.1 1.5	42.2	39.5-44.2	41.0 1.4	47.6		44.0	
Prepectoral length	21.3	20.2-25.4	22.5 1.3	20.6	20.1-22.5	21.6 1.1	26.8		23.1	
Prepelvic length	46.9	45.0-48.9	47.3 1.3	44.9	45.4-46.0	45.8 0.5	50.7		48.6	
Prenasal length	70.7	69.4-73.7	71.9 1.6	72.2	74.7-77.0	75.5 1.3	73.2		48.6	
Distance between pectoral & pelvic fin origins	28.0	24.0-28.9	26.7 1.5	23.5	25.2-27.9	25.9 0.8	28.1		26.1	
Distance between pelvic & anal fin origins	27.3	24.0-27.3	25.3 1.1	28.0	25.8-31.2	28.0 1.8	24.4		24.6	
Length of dorsal fin base	38.2	34.0-39.7	36.9 1.9	42.2	40.9-44.6	42.2 1.5	35.1		37.0	
Height of dorsal fin	25.9	24.2-26.1	25.2 0.6	24.4	22.4-25.4	23.9 0.9	22.4		24.3	
Length of pectoral fin	21.8	20.7-23.4	21.7 0.7	23.6	22.0-24.0	22.6 0.6	23.7		25.6	
Length of ventral fin	20.8	19.6-21.9	20.6 0.7	24.1	20.4-23.5	21.9 0.9	19.5		24.7	
Length of anal fin base	11.6	10.0-11.9	11.0 0.6	11.8	10.3-12.4	11.2 0.6	10.9		12.2	
Height of anal fin	20.8	18.1-23.1	19.9 1.3	22.1	20.0-25.9	22.2 1.8	damaged		23.9	
Length of caudal fin	34.7	31.1-37.5	34.5 1.7	32.5	30.7-31.6	31.2 0.6	damaged		damaged	
Length of caudal peduncle	20.1	17.9-22.3	20.1 1.1	20.2	18.9-20.2	19.4 1.0	21.7		19.2	
Height of caudal peduncle	11.9	1.1-12.5	11.9 0.3	11.8	10.7-11.9	11.3 0.5	12.9		11.6	
Height of head at occiput	97.6	93.3-100.0	95.8 2.2	97.4	95.2-116.1	103.5 5.9	100.0		98.0	

TABLE 1 (contd.)

MORPHOLOGICAL CHARACTERS OF *S. MANIPURENSIS*, *S. SEMIPLLOTUS*, *S. CIRRHOSUS* AND *S. MODESTUS*

N	<i>S. manipurensis</i>				<i>S. semipllotus</i>				<i>S. cirrhosus</i>		<i>S. modestus</i>		
	Holotype	Paratypes	MUMF	2049	2051-2055, 2145, 2146	2236-2240	2250-2251	2011, 2045-2048,	2307	ZSIF 2861/2, 2662/2, 13403/1	Holotype	ZSIF 9747/1	Syntype
Head width	71.7	63.3-742	67.7	3.6	65.2	58.8-76.1	65.2	6.6	58.8				
Snout length	34.2	28.7-39.6	31.4	2.5	35.2	30.1-38.2	34.7	3.0	29.4				
Eye diameter	27.3	20.0-31.8	27.7	2.7	21.2	20.8-30.0	26.1	2.9	36.2				
Interorbital space	43.9	37.2-46.7	41.7	3.3	47.6	43.4-48.8	46.6	3.4	40.7				
Mouth width	52.2	47.0-61.5	52.3	5.3	60.9	52.6-65.2	57.8	4.4	45.3				
Pectoral length	88.8	82.1-96.9	87.5	5.0	100.0	95.4-107.6	99.1	4.1	87.8				
Counts													
Dorsal fin rays	IV, 22	IV, 20-23			IV, 24	IV, 23-25			III, 25			IV, 20	
Pectoral fin rays	16	15-16			15	15-16			15			15	
Ventral fin rays	i, 9	i, 9			i, 9	i, 9			i, 8			i, 8	
Anal fin rays	iii, 7	ii-iii, 7-8			ii, 7	ii, 7			damaged			iii, 7	
Predorsal scales	12	12-13			11	11-12			13			14	
Lateral line scales	33	32-36			31	29-31			33			32	
Lateral transverse scales	7/1/4	7/1/4			6/1/4	6/1/4			7/1/4			7/1/4	
Pores/tubercles on snout	scattered, many	scattered, many			10 in a row	10 in a row			10-12 in a row			4 in a row	4+4 scattered

TABLE 2

FREQUENCY DISTRIBUTION OF COUNTS OF *S. MANIPURENSIS*, *S. SEMIPLLOTUS*, *S. CIRRHOSUS* AND *S. MODESTUS*

Name of species	Branched dorsal fin rays								Branched anal fin rays								Lateral line scales								Predorsal scales			
	20	21	22	23	24	25	7	8	9	29	30	31	32	33	34	35	36	11	12	13	14	11	12	13	14			
<i>S. manipurensis</i>	2	8	7	4	-	-	18	3	-	-	-	-	5	10	3	2	1	-	-	-	-	6	15	-	-			
<i>S. semipllotus</i>	-	-	-	3	5	3	11	-	-	2	6	3	-	-	-	-	-	-	-	-	-	7	4	-	-			
<i>S. cirrhosus</i>	-	-	-	-	-	1	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-			
<i>S. modestus</i>	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-			

pores directed towards middle of orbit. Eye moderate, almost in middle of head. Mouth wide, inferior, lower jaw with a horny layer. Barbels a small maxillary pair, more prominent in smaller specimens. Dorsal fin high, with long base. Last dorsal simple ray strong, osseous, not serrated in large specimens but slightly serrated in distal half in juveniles. Pectoral fin equal to head, almost reaching pelvic fin origin. Pelvic fin shorter than pectoral, not reaching anal fin. Caudal fin forked.

Colour: Dull silvery with black dorsal surface. Pectoral, pelvic and anal fins orange.

Distribution: INDIA: Arunachal Pradesh, Assam (Brahmaputra drainage), north Bengal; Nepal: Terai (Ganga drainage).

Remarks: According to Day (1878), the species is often termed Rajah-mas (King fish) in upper Assam, as it was asserted that when captured it had to be taken to the Rajahs for their own consumption. He also remarked on the statement of McClelland that the fish attained at least two feet in length and was reckoned the most delicious in Assam. Menon (1989) included *S. semiplotus* in the list of endangered freshwater fishes of India. The underutilised hill stream fishes of Nepal were listed by Shreshtha (1997), who included this species, and suggested the possibility of developing recreational fishery of these fishes in Nepal.

DISCUSSION

Most workers (Bleeker, 1859; Günther, 1868; Day, 1878; Jayaram, 1981; Barman, 1988) erroneously considered that *Semiplotus* lacks barbels. However, Hora (1937) examined all the specimens of *Semiplotus* in ZSI and a specimen from Nepal collected by Col. Bailey, and concluded that the presence of small maxillary barbels is a constant feature of the genus. He further remarked that in young specimens barbels are longer and project outside the groove, whereas in half-grown and adult specimens they are more or less concealed, though it is not very

difficult to make them out. This statement of Hora (*op. cit*) holds true for the present study, as all the specimens of *Semiplotus* examined (including the type specimens of *S. manipurensis*) have a small pair of maxillary barbels. Thus the presence of a small pair of maxillary barbels is a distinct character of the genus *Semiplotus*.

Interesting observations have been made in the ichthyogeography of *Semiplotus* species which are endemic in Southeast Asia. McClelland (1839) originally described *S. semiplotus* from the Brahmaputra river, upper Assam. Day (1878) put the fish under *S. maclellandi* and reported that it inhabited the rivers of Assam, especially in the upper portion but was also found as low as Goalpara and in Myanmar. Günther (1868) on the other hand mentioned only Assam as the place of its distribution. Mukerji (1933) included this species in the list of fishes of Mali Hka river, upper Myanmar without giving a systematic account. As there is no specimen of the fish collected by either F. Day or D.D. Mukerji in ZSI (although they are supposed to be there), it is difficult to establish the correct identity of the species and its distribution in Myanmar. Hora (1937) reported this fish from the Nepal terai which is drained by tributaries of the Ganga. Thus, *S. semiplotus* is perhaps present only in the Ganga-Brahmaputra drainage. On the other hand *S. cirrhosus* and *S. manipurensis* share the Chindwin-Irrawaddy drainage, which is entirely separate from the Brahmaputra drainage (Chaudhuri, 1919). Further, distribution of *S. modestus* is totally isolated from other species of the genus. The species is distributed in Akyab of Myanmar and parts of Mizoram (India) which are drained by the Kaladan drainage which enters the Bay of Bengal directly. Kaladan drainage is separated from the Barak-Brahmaputra drainage of India by the Chittagong hill tract. The region is also separated from the Chindwin-Irrawaddy drainage of Myanmar by the north-south

extension of the Arakan Yoma hill range. From the above statements it is clear that *Semiplotus* is distributed in north India, Myanmar and Nepal, with restricted distribution in different drainages. A detailed study of the geological history of the region may give a true picture of the phylogeny of these fishes.

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